

88. (New) The isolated protein of claim 87 in which the retinoid is an all-*trans* retinoic acid.
89. (New) The isolated protein of claim 83 in which the nucleic acid molecule encodes a protein comprising an amino acid sequence selected from the group consisting of SEQ ID NO:2, SEQ ID NO:4, SEQ ID NO:32 and a conservatively substituted amino acid variant thereof.
90. (New) An isolated protein having the ability to hydroxylate a retinoid at the 4-position of the β -ionone ring and encoded by a nucleic acid molecule comprising a nucleotide sequence that hybridizes under high stringency conditions, wherein high stringency conditions include a wash step of about 0.2x SSC at 50°C, to the nucleotide sequence shown as SEQ ID NO:3 or SEQ ID NO:5 or SEQ ID NO:31, including a conservatively substituted amino acid variant thereof.
91. (New) The isolated protein of claim 90 in which the nucleic acid molecule comprises a nucleotide sequence identified as SEQ ID NO:3 or SEQ ID NO:5 or SEQ ID NO:31, or which varies from SEQ ID NO:3 or SEQ ID NO:5 or SEQ ID NO:31 in a coding region due to the degeneracy of the genetic code.
92. (New) The isolated protein of claim 90 in which the sequence of the nucleic acid molecule comprises a part of a human, fish or mouse genome, or variants therefrom due to the degeneracy of the genetic code.
93. (New) The isolated protein of claim 90 wherein the retinoid is a retinoic acid.
94. (New) The isolated protein of claim 93 in which the retinoid is an all-*trans* retinoic acid.
95. (New) The isolated protein of claim 90 in which the nucleic acid molecule encodes a protein comprising an amino acid sequence selected from the group consisting of SEQ ID NO:2, SEQ ID NO:4, SEQ ID NO:32 and a conservatively substituted amino acid variant thereof.
96. (New) An isolated polypeptide which binds to an antibody elicited by a protein having an amino acid sequence selected from the group consisting of SEQ ID NO:2, SEQ ID NO:4 and SEQ ID NO:32, wherein the antibody is specific for the protein.
97. (New) The polypeptide of claim 96 wherein the antibody is elicited by an epitope located within an unconserved region of the protein, the unconserved region consisting of amino acids 1 to 432 of SEQ ID NO:2.
98. (New) The polypeptide of claim 97 wherein the epitope comprises amino acids 70 to 74 of SEQ ID NO:2.
99. (New) The polypeptide of claim 96 wherein the antibody is elicited by an epitope located within an unconserved region of the protein, the unconserved region consisting of amino acids 1 to 436 of SEQ ID NO:4.